

# **EXHIBIT A**



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**VIA EMAIL**

Mr. Nicholas R. Hahn  
Lornic Design Incorporated  
12613 James Street #10  
Holland, MI 49424

Re: Legal Opinion Regarding Non-Infringement of  
U.S. Pat. No. 9,433,225 entitled "Brush Element,  
Assembly, Brushing Device And Methods Of Coupling  
And Uncoupling"  
Our File No. LOR161610

Dear Nick:

In accordance with your request, we have completed a comprehensive investigation of U.S. Pat. No. 9,433,225 (the '225 patent) entitled "Brush Element, Assembly, Brushing Device And Methods Of Coupling And Uncoupling" (Ex. A), and how this patent relates to the Lornic dehairing whip (the "Lornic Whip"). The patent identifies Mr. Hans Servaas of Neede, The Netherlands as the inventor. The '225 patent has been assigned, according to the United States Patent and Trademark Office Assignment Branch, to Humbolt B.V. of Lichtenvoorde, The Netherlands ("Humbolt"). Based on the accusation letter, Humbolt is now a part of the Marel Group.

This opinion is deemed confidential and attorney-client privileged information. As such, great care should be taken relative to dissemination of the opinion.

**I. SCOPE OF THE OPINION**

The focus of our analysis has been the determination of whether the claims of the '225 patent encompass the Lornic Whip currently designed and developed by Lornic Design Incorporated ("Lornic"), either literally or under an equitable doctrine, known as the "Doctrine of Equivalents," that sometimes expands the protection otherwise provided by the literal meaning of the claims.

Our analysis included a review of the ‘225 patent itself (Ex. A), its prosecution history (Ex. B), the cited prior art (Ex. C), and a review of certain issues pertaining to foreign equivalent patents secured by Humbolt.

Our opinion does not extend to issues of invalidity. Because of the clear non-infringement of the ‘225 patent through sale of the Lornic Whip, we have not undertaken a validity analysis, and for purposes of the opinion, the patent is assumed to be valid. Should the need arise, we will separately consider validity issues with respect to the ‘225 patent.

## **II. SUMMARY OF THE OPINION**

Based on our analysis of the ‘225 patent, as well as our analysis and understanding of the Lornic Whip, and its operation and association with dehairing equipment, it is our opinion that a well-informed court will find that the Lornic Whip, and the use thereof by third parties, does not directly or indirectly infringe any claim of the ‘225 patent, either literally or under the Doctrine of Equivalents.

In particular, all of the claims of the ‘225 patent require, in some fashion, that “the narrowed entrance channel widens into the female receiving space, the female receiving space being substantially larger than the narrowed entrance channel.” The Lornic Whip lacks this structural configuration, and the limitation lacks any scope of equivalents. Additionally, many of the claims further require that the “whip and the female coupling member are manufactured as a single material part.” The Lornic Whip also lacks this structural configuration, and the limitation lacks any scope of equivalents. Finally, as to some of the claims directed to full assemblies for processing carcasses of slaughtered animals, Lornic does not manufacture the components of such an assembly, and only provides the Lornic Whip. As such, Lornic cannot be a direct infringer.

## **III. U.S. PAT. NO. 9,433,225 ISSUED TO SERVAAS**

### **A. The ‘225 Patent Disclosure**

The ‘225 patent is based upon U.S. Pat. App. Ser. No. 12/094,984 which was filed with the USPTO initially on May 23, 2008. Ex. B, p.95. The patent is a National Stage application that extends from International Pat. App. Ser. No. PCT/NL2006/050195 filed under the Patent Cooperation Treaty on August 8, 2006. Ex. A, p. 1. The International Application claims priority from Netherlands Pat. App. Ser. No. 1030536 filed November 28, 2005. Ex. A, p. 1. Under the law, the U.S. application is accorded the filing date of the PCT application, namely August 8, 2006. Ex. A, p. 95. We have, at this point, not studied the original priority application filed in the Netherlands for purposes of determining as to whether the claim of priority is accurate, as it is not directly related to the issues of non-infringement presented below.

As set forth in the Abstract, the ‘225 patent is directed to a brush element for processing carcasses of slaughtered animals, as well as to an assembly of a rotatable body and such brush elements. Ex. A, p. 1.

As set forth in the Background, the '225 patent sets forth that the disadvantage of brush elements known to the inventor was that arranging and removing the such brush elements is described as laborious and it is indicated that such activity can cause considerable loss of time for the brushing device. Ex. A, Col. 1, ll. 30-35.

As set forth in the Detailed Description, and with reference to Figure 1C and 1D, below, it is explained that the brush element 1 has a coupling member 2 and two whips 3 that are connected to the coupling member. Ex. A, Col. 5, ll. 38-42. The brush element is manufactured as one material part that is assembled from resilient plastic. Ex. A, Col. 5, ll. 44-47.

The narrowed entrance 6 tapers toward the receiving space 5 in the direction of the receiving space. Ex. A, Col. 5, ll. 48-51. To move the counter coupling member 7 in and out of the receiving space 5, the narrowed entrance must be temporarily enlarged under bias. Ex. A, Col. 5, ll. 63-66. It is explained that after the counter-coupling member 7 has passed through, the entrance springs back to its starting position. Ex. A, Col. 5, l. 66 – Col. 6, l. 1.

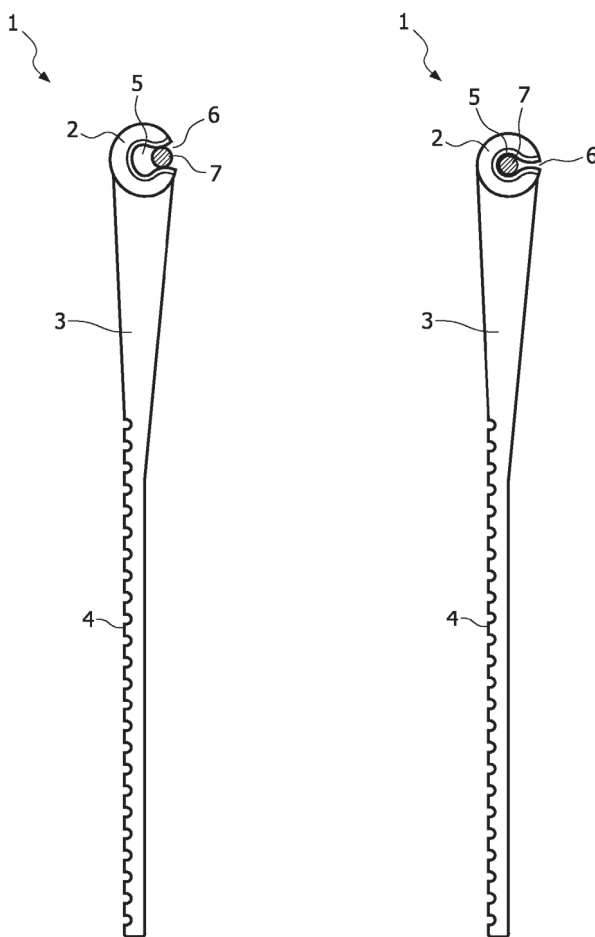


FIG. 1C

FIG. 1D

An assembly is shown in Figure 2A and 2B, reproduced below, wherein a plurality of brush elements are positioned on rod-like counter-coupling members 12 which form a part of a rotatable body. Col. 6, ll. 15-20.

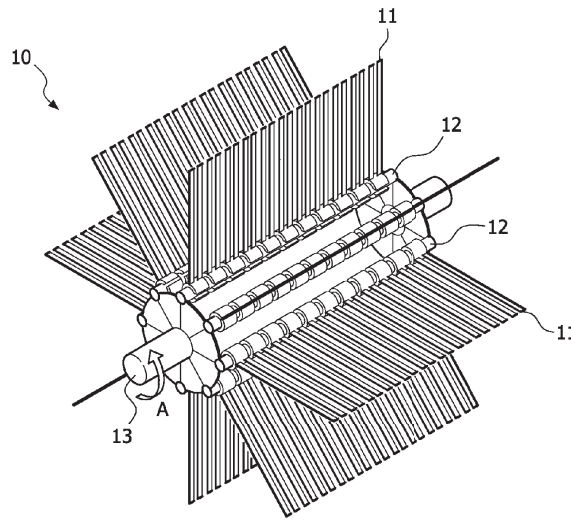


FIG. 2A

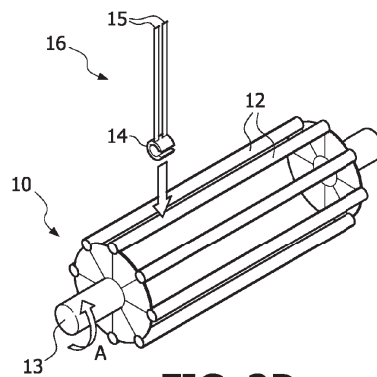


FIG. 2B

### B. The Claims Of The '225 Patent

The '225 patent includes a total of 22 claims, of which claims 1, 13, 18, 19, 20 and 21 are independent claims. Ex. A, Col. 6, l. 54 – Col. 10, l. 49. Claims 2 through 12 depend from claim 1, claims 14 through 17 depend from claim 13, claim 22 depends from claim 21. As it is not possible to infringe a dependent claim if the independent claim from which it depends is not infringed, our focus below will be on the independent claims. As it is our opinion that Lornic does not directly or indirectly infringe the independent claims, it is therefore our also our opinion that Lornic does not infringe the dependent claims.

Claim 1 is directed to a detachable brush element for processing carcasses of slaughtered animals. The claim is reproduced below in its entirety, and, we have highlighted the phrases that will be discussed in greater detail below. The highlighted portions represent some, but not all, of the reasons for non-infringement.

1. A detachable brush element for processing carcasses of slaughtered animals, comprising:

a) at least one female coupling member; and

b) at least one substantially elongated flexible whip extending from and integrated with the at least one female coupling member,

wherein the whip has a profiled side adapted to process carcasses of slaughtered animals,

wherein the female coupling member comprises a resilient cylinder comprising at least one female receiving space comprising, in cross-section, a ring having an opening with a narrowed entrance channel which can be enlarged counter to a bias,

wherein **the narrowed entrance channel widens into the female receiving space**, the female receiving space being substantially larger than the narrowed entrance channel along the longitudinal axis of the whip,

wherein the narrowed entrance channel is arranged in a lengthwise direction of the cylinder, the narrowed entrance channel is directed facing away from the profiled side of the whip, and the narrowed entrance channel narrows toward the female receiving space,

wherein the female coupling member is adapted to couple with a generally cylindrical shaped male counter-coupling member, the ring opening being sized to accommodate a portion of the male counter-coupling member by snap-fitting the female coupling member opening over the male counter-coupling member,

wherein **the whip and the female coupling member are manufactured as a single material part**,

wherein the male counter-coupling member forms a part of a separate rotatable body onto which the female coupling member can be releasably coupled by a snap connection and,

wherein the female coupling member can rotate about the male counter-coupling member.

Claim 13 is directed to an assembly for processing carcasses of slaughtered animals. The claim is reproduced below in its entirety.

13. An assembly for processing carcasses of slaughtered animals, comprising:

a) a rotatable body;

b) at least one brush element having at least one female coupling member; and

c) at least one substantially elongated flexible whip extending from the female coupling member, wherein the whip has a profiled side adapted to process carcasses of slaughtered animals, wherein the female coupling member comprises a resilient cylinder comprising at least one female receiving space comprising, in cross-section, a ring having an opening with a narrowed entrance

channel, and wherein the narrowed entrance channel can be enlarged counter to a bias, and wherein the narrowed entrance channel is arranged in a lengthwise direction of the cylinder and wherein the narrowed entrance channel is directed facing away from the profiled side of the whip and wherein the narrowed entrance channel narrows toward the ring opening;

wherein **the narrowed entrance channel widens into the female receiving space**, the female receiving space being substantially larger than the narrowed entrance channel along the longitudinal axis of the whip,

wherein the female coupling member is releasably coupled to a male counter-coupling member forming part of the separate rotatable body such that the whip extends substantially radially from a rotation shaft of the rotatable body, the ring opening being sized to accommodate a portion of the male counter-coupling member by snap-fitting the female coupling member over the male counter-coupling member, and

wherein the receiving space of the female coupling member engages round the male counter-coupling member.

Claim 18 is directed to a brushing device for processing carcasses of slaughtered animals. The claim is reproduced below in its entirety.

18. A brushing device for processing carcasses of slaughtered animals, comprising:

a) a frame;

b) at least one assembly mounted in the frame, the assembly comprising

(i) a rotatable body,

(ii) at least one detachable brush element having at least one female coupling member, and

(iii) at least one substantially elongated flexible whip extending from the female coupling member wherein the whip has a profiled side adapted to process carcasses of slaughtered animals, wherein the female coupling member comprises a resilient cylinder comprising at least one receiving space comprising, in cross section, a ring having an opening with a narrowed entrance channel, and wherein the narrowed entrance channel can be enlarged counter to a bias and wherein the narrowed entrance channel is arranged in a lengthwise direction of the cylinder and wherein the narrowed entrance channel is directed facing away from the profiled side of the whip, and wherein the narrowed entrance channel narrows toward the ring opening, wherein the female coupling member is releasably coupled to a male counter-coupling member forming part of the rotatable body such that the whip extends substantially radially from a rotation shaft of the rotatable body, the ring opening being sized to accommodate a portion of the male counter-coupling member by snap-fitting the female coupling member over the male counter-coupling member, and wherein the receiving space of the female coupling member engages round the male counter-coupling member;

wherein **the narrowed entrance channel widens into the receiving space**, the receiving space being substantially larger than the narrowed entrance channel along the longitudinal axis of the whip, and

c) drive means for causing rotation of the rotatable body of the assembly.

Claim 19 is directed to a detachable brush element for processing carcasses of slaughtered animals. The claim is reproduced below in its entirety.

19. A detachable brush element for processing carcasses of slaughtered animals, comprising:

a) at least one female coupling member; and

b) at least one substantially elongated flexible whip extending from and integrated with the at least one female coupling member wherein the whip has a profiled side adapted to process carcasses of slaughtered animals,

wherein the female coupling member comprises a resilient cylinder comprising at least one female receiving space comprising a ring having an opening with a narrowed entrance channel which can be enlarged counter to a bias and wherein the narrowed entrance channel is arranged in a lengthwise direction of the cylinder, wherein the narrowed entrance channel narrows toward the ring opening, and wherein the narrowed entrance channel is directed facing away from the profiled side of the whip, the female coupling member adapted to couple with a generally cylindrical shaped male counter-coupling member, the ring opening being sized to accommodate a portion of the male counter-coupling member,

wherein the male counter-coupling member is forming a part of a separate rotatable body onto which the female coupling member can be releasably coupled, wherein the narrowed entrance channel widens into the receiving space, the receiving space being substantially larger than the narrowed entrance channel along the longitudinal axis of the whip, and

wherein the whip and the coupling member are manufactured as a single material part.

Claim 20 is directed to an assembly for processing carcasses of slaughtered animals. The claim is reproduced below in its entirety.

20. An assembly for processing carcasses of slaughtered animals, comprising:

a) a rotatable body including a plurality of rods associated with and spaced around at least one shaft;

b) at least one brush element having at least one female coupling member; and

c) at least one substantially elongated flexible whip extending from the female coupling member wherein the female coupling member comprises a ring having at least one female receiving space provided with a narrowed entrance, and wherein the narrowed entrance can be enlarged counter to a bias;

wherein the narrowed entrance widens into the receiving space, the receiving space being substantially larger than the narrowed entrance along the longitudinal axis of the whip, and

wherein the female coupling member is releasably coupled to one of the rods such that the whip extends substantially radially from the at least one shaft of the rotatable body and the brush element at least partially rotates around the rod and the shaft and wherein the narrowed entrance narrows toward the rod.

Claim 21 is directed to a detachable brush element for processing carcasses of slaughtered animals. The claim is reproduced below in its entirety.



21. A detachable brush element for processing carcasses of slaughtered animals, comprising:

a) at least one female coupling member comprising a resilient cylinder comprising an elongated narrowed entrance channel formed therein, providing the coupling with a C shape having a female receiving space and defining an axis of rotation, the C shape being adapted to enlarge counter to a bias, the channel being adapted to detachably couple by a snap connection through the C shape to a rod and adapted to rotate thereabout and wherein the narrowed entrance channel narrows toward the rod; and,

b) at least one substantially elongated flexible whip member extending from and integrated with each female coupling member wherein the whip has a profiled side adapted to process carcasses of slaughtered animals, each whip member extending perpendicular to the axis of rotation of the channel, wherein the narrowed entrance channel is arranged in a lengthwise direction of the cylinder and wherein the narrowed entrance channel is directed facing away from the profiled side of the whip and wherein the narrowed entrance channel widens into the female receiving space, the female receiving space being substantially larger than the narrowed entrance channel of the at least one substantially elongated flexible whip along the longitudinal axis of the whip.

### C. Prosecution history of the '225 patent

The application that matured into the '225 patent was filed on May 23, 2008, with a filing date of August 8, 2006, based on the filing date of the PCT International Application from which the '225 patent is a United States National Phase. The application was filed initially with 18 claims. Ex. B, p. 68-70. At the time of filing, the application was filed with a preliminary amendment that modified the claims 1 through 18 and added two further claims, 19 and 20. After entry of the preliminary amendment claims 1, 12, 16, 17 and 18 were independent claims.

On February 19, 2010, the Examiner at the USPTO issued an Office Action that indicated that the claims are directed to two different inventions, namely a first group directed to a brushing device and a second group directed to a method of coupling and uncoupling a brushing device. Ex. B, pp. 114-118. The Examiner required that one of the two groups be elected for prosecution, as, a single application cannot be directed to two different inventions. On March 10, 2010, the patentee responded, electing the first group, namely the brushing device. Ex. B, pp. 120-121. The first group was embodied in claims 1-16 and 19-20 of the application as filed. As a result of the election, claims 1-16 and 19-20 were substantively examined, with claims 17 and 18 being withdrawn from examination.

On April 13, 2010, the Examiner at the USPTO issued a first substantive Office Action. Ex. B, pp. 124-134. Among other procedural and other rejections and objections, the Examiner rejected all of the pending claims. In particular, with respect to the three independent claims, 1, 12 and 16, in the pending application, all three were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Pat. No. 3,840,938 issued to Carlson. Ex. B, pp.128-130.

On July 13, 2010, after an interview with the Examiner to discuss procedural matters, the patentee responded to the first substantive Office Action. Ex. B., pp. 148-158. As to claim 1, the claim was amended to include the following language "...wherein the whip and the coupling member are manufactured from a single material part." Ex. B, p. 152. This was essentially the incorporation of prior claim 10 into claim 1. Prior claim 10 was rejected under 35 U.S.C. §103 as

being obvious over the '298 patent in further view of U.S. Pat. No. 3,523,324 issued to Debaere. Ex. B., pp. 131-132.

In support of the amendment, the patentee stated that such a configuration "enables a simpler carrying construction than Carlson that is, for example, relatively easy to produce and clean." Ex. B, p. 156. The patentee continued, "[a]lso, there is more freedom in mounting the whips to the carrying construction...and it enables that '*a brush element can for instance be snapped easily and quickly round a rod suitable for this purpose*' (quoting the specification, emphasis in original). Ex. B, pp. 156-157. Additionally, the patentee stated that support for the amendment can be found at page 3, lines 24-25 of the application. Ex. B, pp. 156 and 63.

No further amendments were made to the other independent claims 12 and 16.

On September 8, 2010, the Examiner issued a second substantive Office Action. Ex. B, pp. 172-180. This second substantive Office Action was deemed a FINAL action under the rules. The Examiner maintained the rejection under 35 U.S.C. §102(b) based on the '938 patent to Carlson as to claims 12 and 16. As to claim 1, the Examiner maintained the rejection as set forth in the rejection of prior claim 10, namely, that claim 1, as amended, was deemed obvious over the '938 patent in view of the '324 patent. The Examiner explained that the '938 patent and the '324 patent disclose that the whip and coupling member are manufactured from a single material part, and that the two patents are combinable as that have similar structure with similar function. Ex. B, p. 179.

Further, the Examiner noted that no amendments or arguments were made to the independent claims 12 and 16.

On March 8, 2011, the patentee filed a Request for Continued Examination (RCE) to have the Examiner consider the Amendment and Response After Final that was filed by the patentee. In the Amendment and Response, the patentee made several further amendments to the claims. In claim 1, the patentee narrowed the receiving space into a "female receiving space" that had "in cross-section, a ring having an opening" and that the "female coupling member [is] adapted to couple with a generally cylindrical shaped male counter-coupling member, the ring opening being sized to accommodate a portion of the counter-coupling member by snap-fitting the female coupling member opening over the male counter coupling member." Ex. B, pp. 192-193. No amendments were made to claims 12 or 16, and new independent claims, 21 and 23, were added.

The Applicant, at length, argued both the teachings of the '398 patent, and the distinctions between the '398 patent and the patentee's invention as claimed. Additionally, the patentee argued the combination with the '324 patent. Ex. B, p. 192-194.

On December 19, 2013, more than two and a half years after the filing of the RCE, the Examiner issued a third substantive Office Action. Ex. B, p. 211-221. The Examiner maintained the rejection of claim 16 under 35 U.S.C. §102(b) based on the '938 patent and further added a rejection of the claim under 35 U.S.C. §102(b) based on the '324 patent. As to claims 1, 12 and 21, the remaining independent claims, the Examiner rejected this claim under 35 U.S.C. §103 as obvious over the '324 patent in view of U.S. Pat. No. 7,070,494 issued to Rapp et al.

The Examiner again noted that no arguments were received as pertaining to claim 16. And that the prior remarks were moot in light of the newly cited '494 patent which formed the substance of the new rejections. Ex. B, pp. 219-220.

On March 19, 2014, the patentee responded to the third substantive Office Action. Ex. B, pp. 224-234. In the response, the patentee made only amendments to claim 16. In that claim, the patentee added structures to the "at least one assembly mounted in the frame". Ex. B, pp. 229-230.

The arguments generally centered around the following: the '324 patent does not disclose a ring opening as claimed; the '324 patent does not disclose a single material part; the combination with the '494 patent is improper; the '494 patent does not disclose the coupling member, the '494 patent does not disclose a coupling member with a narrowed entrance, and that the '494 patent does not disclose a the whip and the coupling member being a single material part. Ex. B, pp. 232-234.

On May 6, 2014, the Examiner issued a fourth substantive Office Action. Ex. B, pp. 238-247. This Office Action was designated a FINAL action under the rules. The Examiner rejected all of the independent claims, 1, 12, 16, 21 and 23 under 35 U.S.C. §103 based on the contention that they are unpatentable over the '324 patent in view of the '494 patent. Ex. B, pp. 241-242.

The Examiner contended that the '324 patent disclosed each of the features other than the ring opening having a narrowed entrance which can be enlarged counter to a bias and the ring snap-fitted to the counter-coupling member, and that this feature was disclosed in the '494 patent. Ex. B, pp. 241.

On November 5, 2014, the patentee filed a second RCE to have the Examiner consider a second Amendment and Response After Final that was initially submitted on August 6, 2014. Ex. B, pp. 250-263, 276, 278. In the response, a number of amendments were made to the independent claims. With respect to claim 1, among other amendments, the patentee added that the "male counter-coupling member forms a part of a separate rotatable body onto which the female coupling member can be releasably coupled by a snap connection" and also that "the female coupling member can rotate about the male counter-coupling member." Ex. B, pp. 253.

With respect to claim 12, the patentee stated that the female receiving space comprises "in cross-section, a ring having an operating (sic)" and that the "ring opening being sized to accommodate a portion of the male counter-coupling member by snap-fitting the female coupling member over the ale (sic) counter-coupling member. A similar amendment was made to claim 16. Additional amendments were made to claims 21 and 23. And, finally, another independent claim, namely, claim 24, was added.

The patentee made several arguments relative to the distinction between the invention that was claimed vis-à-vis the '324 and '494 patents, as well as rejecting the combination.

On February 26, 2015, the Examiner issued a fifth substantive Office Action. Ex. B, pp. 285-297. The Examiner again rejected the independent claims 1, 12, 16, 21 and 23 under 35 U.S.C. §103 based upon the combination of the '324 and the '494 patents. Independent claim 24 was rejected

under 35 U.S.C. §103 based on the combination of the '324 patent in view of the '938 patent. The Examiner, discussed at length his observations on the arguments forwarded by the patentee. The Examiner again rejected the arguments of the patentee with respect to all of the claims. Ex. B, pp. 295-296.

On August 26, 2013, the patentee responded to the fifth substantive Office Action. Ex. B, pp. 300-312. Again, a number of amendments were made to overcome the rejections. Among others in claim 1, the female coupling member was amended to be "integrated". Additionally the "whip has a profiled side adapted to process carcasses of slaughtered animals." The female coupling member comprises "a resilient cylinder." Additionally, the "narrowed entrance channel is arranged in a lengthwise direction of the cylinder" and "the narrowed entrance channel is directed facing away from the profiled side of the whip.

With respect to the remaining independent claims, similar amendments were made. That is, each of the claims now required that the female coupling member be "integrated."

The patentee stated that the support for the term "integrated" is found on page 3 of the application at lines 24-25. Ex. B, p. 310. The supporting text at page 3, lines 24-25 states that the "whip and the coupling member are preferably manufactured from a single material part. Such a brush element is simple to manufacture and has great durability. That is, the same language that is cited in support of the claim language "...wherein the whip and the coupling member are manufactured from a single material part." This term was later removed, but gives insight into what is meant by the term "integrated," as the term remains in other locations in the claims, and forms an additional reason for non-infringement that will not be discussed in detail below.

The patentee further describes that the '494 patent does not disclose a ring that is an integrated part of the brush element, rather it is a separate retaining ring. Ex. B, p. 311.

On September 23, 2015, the Examiner issued a sixth substantive Office Action. Ex. B, pp. 318-332. This Office Action was designated as a FINAL action under the rules. The Examiner again rejected claims 1, 12, 16 and 21 under 35 U.S.C. §103, this time based upon a combination of the '324 patent in view of U.S. Pat. No. 5,445,163 issued to Machacek. The rejection of claim 23 based on the combination of the '324 patent and the '494 patent was maintained. Further, claim 24 was rejected under 35 U.S.C. §103 based on a combination of the '324 patent and the '163 patent. The Examiner further rejected the arguments of the patentee. Ex. B, pp. 330-331.

On February 4, 2016, the patentee and the Examiner had an telephonic interview. Ex. B, pp. 336-339. In the Examiner's summary of the interview, mailed February 10, 2016, the Examiner noted that it was discussed that the claims would be amended "to include the limitations of a first opening on the outside of the cylinder that tapers down to the entrance channel and the entrance channel opening to a second opening in the interior of the cylinder that is larger than the first opening and the whip having an upper portion disposed above the profiled portion that tapers outwardly from the profiled portion to the cylinder." Ex. B, p. 339.

On February 23, 2016, the patentee filed another RCE along with an amendment. Ex. B, p. 340-354. In the amendment, the independent claims were each amended so that the "narrowed

entrance channel narrows toward the ring.” An additional dependent claim was added that depended from claim 1. The newly added claim, as explained, “is added to recite that the narrowed entrance channel widens into the female receiving space, the female receiving space being substantially larger than the narrowed entrance channel along the longitudinal axis of the whip.” Ex. B, pp. 353.

On March 30, 2016, the Examiner issued a seventh substantive Office Action. Ex. B, p. 361-377. In the office action, the Examiner maintained the prior rejections, and explained the reasons behind the maintenance of the rejections. Ex. B, pp. 374-375. However, the Examiner did indicate that claim 26 was deemed allowable if amended so as to be independent. Ex. B, p. 374. This marked the first instance that the Examiner agreed as to allowable subject matter.

On May 20, 2016, the Examiner issued the Notice of Allowance and Issue Fee Due. Ex. B, p. 382. The Examiner issued a number of Examiner’s amendments, all of which stemmed from the response that was filed, along with an interview of May 5, 2016. Ex. B, p. 387 (the patentee confirmed the accuracy of the Examiner’s summary with its own submission) Ex. B, p. 419. By way of Examiner’s amendment, each of the independent claims was amended to include the subject matter of claim 26 (which the Examiner allowed). The Examiner redrafted each of the claims to incorporate the elements of claim 26. Ex. B, pp. 388-395. The Examiner then reiterated that it was the overall combination of all of these elements that led to the allowance of the claims, all in the Reasons for Allowance. Ex. B, pp. 395-398.

On May 3, 2016, the patentee paid the issue fee and completed additional steps that were required by the USPTO. The patent issued on September 6, 2016. There have not been any maintenance fees that have come due. Barring a failure to pay maintenance fees, and an adjudicated invalidity and/or unenforceability, the patent will expire on September 25, 2028, with all applicable patent term extensions.

#### IV. CONSTRUCTION OF THE CLAIMS

In construing the claims for purposes of this opinion, we focused on the independent claims, and then focused upon two specific elements that are found in multiple claims. In fact, one of the two specific elements are found in each of the independent claims. We then applied the relevant legal principles of claim construction to construe the elements as follows:

Claim element recited in the claims	Construction
“the narrowed entrance channel widens into the female receiving space”	the narrowed entrance channel expands as it reaches the female receiving space, such that the narrowest point of the narrowed entrance channel is spaced apart from the female receiving space.
“the whip and the female coupling member are manufactured as a single material part”	The whip and the female coupling member are formed together from only one piece of material.



### A. Applicable Legal Principles Of Claim Construction

Set forth below is a summary of the legal principles that we considered, followed, and applied in connection with our claim construction. As such, these principles should be considered as part of our analysis, insofar as they reflect the steps and standards that we used in construing the claims.

To determine whether a court or jury may find infringement of the ‘141 patent claims, it is necessary for the court to first construe the claims. *See Markman v. Westview Instruments, Inc.*, 517 U.S. 370, 384 (1996). The claims of a patent “define the scope of the patentee’s rights.” *Teva Pharmaceuticals USA Inc. et al. v. Sandoz Inc. et al.* 574 US \_\_\_, \_\_\_ (2015) (slip op., at 1) (citing *Markman* 517 U.S. at 372). In effect, the claims define the “metes and bounds” of the invention in much the same way as the legal description in a deed to land defines the boundaries of the property being conveyed. *See Graver Tank & Mfg. Co., Inc. v. Linde Air Products Co.*, 339 U.S. 605, 607 (1950). Construing the scope of the claims is the “first step” that must be taken in every validity or infringement analysis. *Amazon.Com, Inc. v. Barnesandnoble.Com, Inc.*, 239 F.3d 1343, 1351 (Fed. Cir. 2001) (“It is elementary in patent law that, in determining whether a patent is valid and, if valid, infringed, the first step is to determine the meaning and scope of each claim in suit.” (citing *Lemelson v. Gen. Mills, Inc.*, 968 F.2d 1202, 1206 (Fed. Cir. 1992))). To the extent claim construction is based “only [on] evidence intrinsic to the patent (the patent claims and specifications, along with the patent’s prosecution history), the [construction] will amount solely to a determination of law”. *Teva*, 574 US at \_\_\_ (2015) (slip op., at 12).

The meaning of a claim is ascertained by reference to the claim language itself, to the patent specification, to other claims of the patent, to the prosecution history of the patent, and in some instances, to extrinsic evidence, such as expert testimony as to what claim terms mean to a person skilled in the art. *See Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (“Because the meaning of a claim term as understood by persons of skill in the art is often not immediately apparent, and because patentees frequently use terms idiosyncratically, the court looks ‘to those sources available to the public that show what a person of skill in the art would have understood the disputed claim language to mean.’”) (quoting *Innova/Pure Water, Inc. v. Safari Water Filtration Systems, Inc.*, 381 F.3d 1111, 1116 (Fed. Cir. 2004)).

A court first looks to the claim language because “the claims of a patent define the invention to which the patentee is entitled the right to exclude.” *Phillips*, 415 F.3d at 1312. Unless otherwise defined in the specification, the words of a claim must be given their ordinary and customary meaning, that is, “the meaning that the term would have to a person of ordinary skill in the art at the time of the invention. *Id.* at 1313. Although claim differentiation may at times be useful, this “doctrine cannot alter a definition that is otherwise clear from the claim language, description, and prosecution history.” *Amgen Inc. v. Hoechst Marion Roussel, Inc.*, 314 F. 3d 1313, 1326 (Fed. Cir. 2009) (citing *O.I. Corp. v. Tekmar Co., Inc.*, 115 F.3d 1576, 1582 (Fed.Cir.1997)). Claims do not have meaning removed from the context from which they arose and, thus, cannot enlarge what is patented beyond what the inventor has described as the invention. *See Abbott Laboratories v. Sandoz, Inc.*, 566 F. 3d 1282, 1289 (Fed. Cir. 2009).

“The specification necessarily informs the proper construction of the claims” and it is “appropriate for a court . . . to rely heavily on the written description for guidance as to the meaning of claims.” *Phillips*, 415 F.3d at 1317. Although claim terms are given their ordinary meaning, “claims must be read in view of the specification, of which they are a part.” *SciMed Life Systems, Inc. v. Advanced Cardiovascular Sys., Inc.*, 242 F.3d 1337, 1340 (Fed. Cir. 2001).

In addition to consulting the specification, a court should also consider the patent’s prosecution history. *Phillips*, 415 F.3d at 1317. As a complete record of proceedings before the PTO, the prosecution history may contain representations made by the applicant regarding the scope of the claims. *See Vitronics Corp. v. Conceptronic, Inc.*, 90 F. 3d 1576, 1582 (Fed. Cir. 1996). Thus, the prosecution history can limit the meaning of claim terms “so as to exclude any interpretation that was disclaimed during prosecution.” *Southwall Tech., Inc. v. Cardinal IG Co.*, 54 F.3d 1570, 1576; *see also, Vitronics*, 90 F.3d at 1583. However, because the prosecution history “represents an ongoing negotiation between the PTO and the applicant, rather than the final product of that negotiation, it often lacks the clarity of the specification and thus is less useful for claim construction purposes.” *Phillips*, 415 F.3d at 1317.

Under some circumstances, a court “will need to look beyond the patent’s intrinsic evidence and to consult extrinsic evidence in order to understand, for example, the background science or the meaning of a term in the relevant art during the relevant time period.” *Teva*, 574 US at \_\_\_\_ (2015) (slip op., at 12). However, it is improper for the court to rely on extrinsic evidence that is clearly at odds with the construction mandated by the intrinsic evidence. *Phillips*, 415 F.3d at 1318. That is because “extrinsic evidence in general is less reliable than the patent and its prosecution history in determining how to read claim terms.” *Phillips*, 415 F.3d at 1318.

## **B. Construction of the Claim Element “the narrowed entrance channel widens into the female receiving space”**

The claims of the ‘225 patent all require that “the narrowed entrance channel widens into the female receiving space.” As set forth below, that means that the narrowed entrance channel expands as it reaches the female receiving space, such that the narrowest point of the narrowed entrance channel is spaced apart from the female receiving space.

### **i. Plain Meaning Of The Claim Element**

To determine the scope of the claim’s protection, we first turn to the words of the claims. In our opinion, a court is likely to interpret “the narrowed entrance channel widens into the female receiving space” as requiring a structure wherein the narrowed entrance channel expands as it reaches the female receiving space, such that the narrowest point of the narrowed entrance channel is spaced apart from the female receiving space. The definition of the term “widens” means to “broaden” or “expand”. *Dictionary.com definition*.<sup>1</sup>

<sup>1</sup> The Federal Circuit has ruled that, in construing ordinary words, it is appropriate to reference a general-purpose dictionary. *See, Phillips*, 413 F.3d 1314 (“In some cases, the ordinary meaning of claim language as understood by a person of skill in the art may be readily apparent even to lay judges, and claim construction in such cases involves

Thus, the proposed definition of the claim term is entirely consistent with the plain meaning of the term “widen” as being “expand”. Thus, the proposed definition that the narrowed entrance channel expands as it reaches the female receiving space, such that the narrowest point of the narrowed entrance channel is spaced apart from the female receiving space is entirely consistent with the plain meaning.

**ii. The Specification Is Consistent With The Plain Meaning Of The Claim Element**

The specification of the ‘225 patent is consistent with the claim element. In particular, the specification shows such a construction in Figure 1D, reproduced below, along with a blow up of the upper portion thereof.



**FIG. 1D**

As can be seen, the narrowed entrance channel 6 is shown above as being the area between the counter-coupling member 7 and the outside. Thus, the Figure 1D shows exactly that the

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little more than application of the widely accepted meaning of commonly understood words. [citation omitted] In such circumstances, general purpose dictionaries may be helpful.”



narrowed entrance channel is narrower in an area that is between the receiving space and the outside, or that what is defined is a structure wherein the narrowed entrance channel expands as it reaches the female receiving space, such that the narrowest point of the narrowed entrance channel is spaced apart from the female receiving space.

The specification, other than in the Figures, does not make any commentary regarding the widening of the narrowed entrance channel. Nevertheless, the specification is entirely consistent with the definition set forth above.

### **iii. The Examination Process Is Consistent With The Plain Meaning Of The Claim Element**

The examination process is consistent with the plain meaning of the claim element. In particular, in an interview, that occurred on February 4, 2016, the Examiner stated that the patentee and the Examiner discussed amending the claims to include the limitations of “a first opening on the outside of the cylinder, that tapers down to the entrance channel and the entrance channel opening to a second opening in the interior of the cylinder that is larger than the first opening and the whip having an upper portion disposed above the profiled portion that tapers outwardly from the profiled portion of the cylinder.” Ex. B, pp. 338-339.

Based on the foregoing interview, the Applicant, on February 23, 2016, amended the claims to add “the narrowed entrance channel narrows toward the ring” in claim 1. Additionally, a dependent claim, claim 26, was added wherein the “narrowed entrance channel widens into the female receiving space, the female receiving space being substantially larger than the narrowed entrance channel along the longitudinal axis of the whip. Ex. B, pp. 343-354.

The Examiner only allowed the patent once the language of claim 26 was added to each of the independent claims.

There is nothing inconsistent with the prosecution history and the examination process as a whole and the proposed plain meaning of the claim element, namely that the narrowed entrance channel expands as it reaches the female receiving space, such that the narrowest point of the narrowed entrance channel is spaced apart from the female receiving space.

## **C. Construction of the Claim Element “the whip and the female coupling member are manufactured as a single material part”**

Claims 1 and 19 require that the whip and the female coupling member are manufactured as a single material part.

### **i. Plain Meaning Of The Claim Element**

As set forth above, we first turn to the words of the claims themselves. In our opinion, a court is likely to interpret “the whip and the female coupling member are manufactured as a single material part” as the whip and the female coupling member are formed together from only one piece of material. The definition of the term “single” is consisting of only one part, element or member. *Dictionary.com definition.*

Thus, the plain meaning of the term “the whip and the female coupling member are manufactured as a single material part” is that the whip and the female coupling member are formed together from only one piece of material. That is claims 1 and 19 require such a structure.

**ii. The Specification Is Consistent With The Plain Meaning Of The Claim Element**

The specification states at Ex. A, Col. 3, ll. 49-51, that “[t]he whip and the coupling member are preferably manufactured from a single material part. Such a brush element is simple to manufacture and has great durability.”

Further, the specification states that “brush element 1 includes coupling member 2 and two whips 3. The brush element is manufactured as one material part assembled from resilient plastic.” Ex. A, Col. 5, ll. 38-47.

Additionally, it is shown in the Figures, such as Figure 1D, set forth above, as well as Figure 1A, referenced in the portion of the specification reproduced above, how the entire structure is formed from a single material, that is, molded of a single material. That is, the structure comprises one material.

There is nothing in the specification that is inconsistent with the plain meaning of the claim element. Additionally, there is nothing in the specification that provides a contrary meaning relative to the requirement that the whip and the coupling member be formed together from only one piece of material.

**iii. The Examination Process Is Consistent With The Plain Meaning Of The Claim Element**

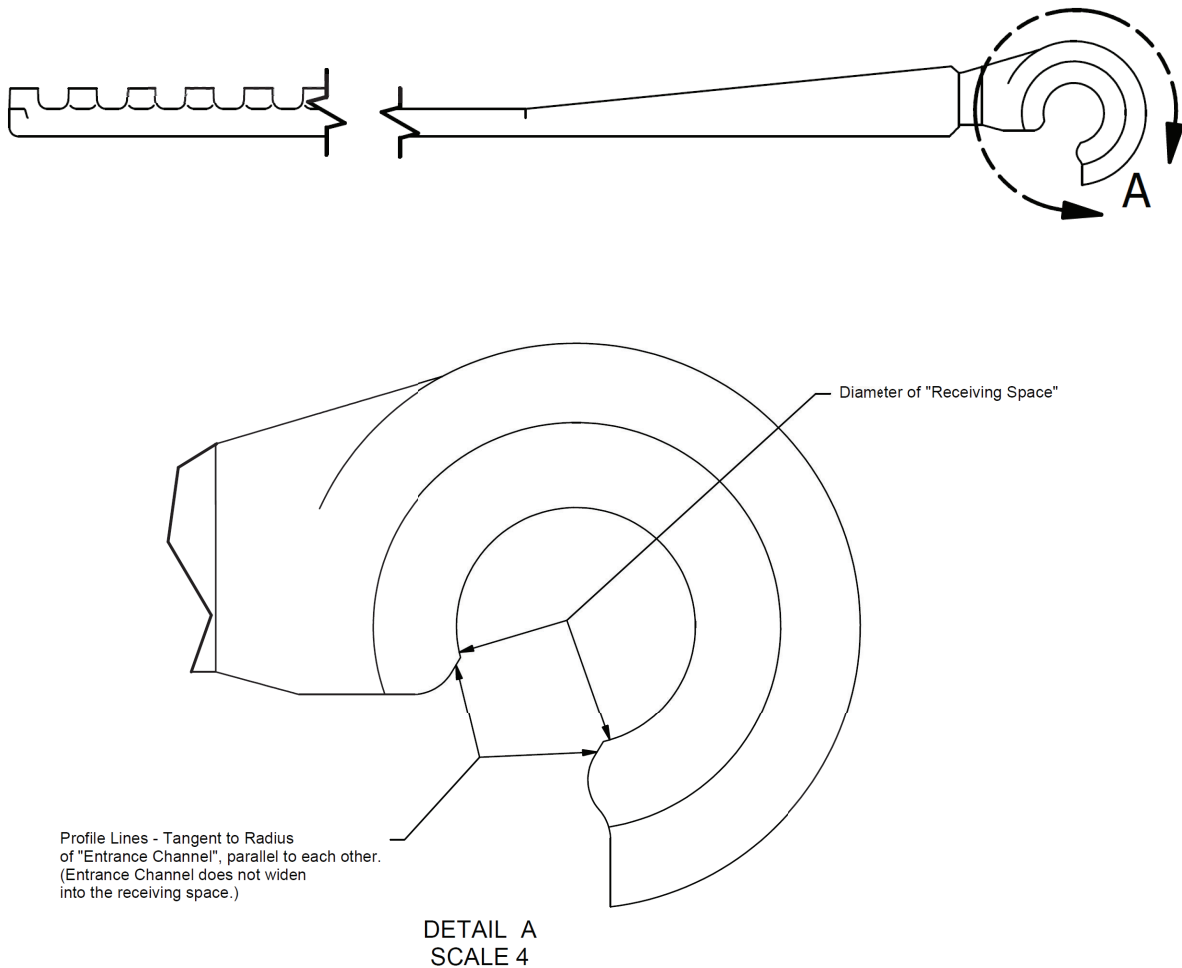
The examination process is consistent with the plain meaning set forth above. In particular, when the amendment was added to claim 1 (that is, incorporating the claim elements of then pending claim 10), the applicant stated that support for the amendment can be found at what became Ex. A, Col.3, ll. 49-51. Additionally, the patentee directed the Examiner to the Figures. Ex. B, pp. 156, 157.

Additionally, the patentee explained that such a configuration “enables simpler carrying construction than [the prior art] that is, for example, relatively easy to produce and clean. Also, there is more freedom in mounting the whips to the carrying construction. Also in the present application it is stated that it enables that ‘*a brush element can for instance be snapped easily and quickly round a rod suitable for this purpose*’. (quoting the specification, emphasis in original). Ex. B, pp. 156, 157.

Therefore, there is nothing in the prosecution history and the examination process that would contradict or be inconsistent with the plain meaning of the claim element, that is, that the whip and the coupling member are formed from a together from only one piece of material.

## V. THE LORNIC WHIP

The Lornic Whip is reproduced in the two figures below.



The Lornic Whip includes two whips connected to a coupling member. The coupling member comprises an insert that is molded with the rest of the whip, namely, the portion surrounding the coupling member and the elongated whips. The insert comprises a material that is different than the remainder of the whip.

Additionally, the what is referred to as the entrance channel in the '225 patent, that is, the entry way into the inner receiving space has a structure that narrows until the receiving space. In particular at the inner receiving space, the entrance channel remains at a steady distance. In other words, at the inner receiving space, the entrance channel does not widen or broaden. Rather, it remains constant, and generally at its narrowest dimension.

Furthermore, when the counter-coupling is positioned within the inner receiving space, the counter coupling member extends into the entrance channel.

## VII. THE CLAIMS ARE NOT INFRINGED

Set forth below is a summary of the legal principles of infringement that we considered, followed and applied in connection with our analysis of infringement. As such, these principles should be considered as part of our analysis, insofar as they reflect the steps and standards we used in conducting our analysis and in reaching our conclusion.

After construing the claims, the court will apply the properly construed claims to the accused product to assess whether the claims are infringed. This step of an infringement analysis is a question of fact. *See Cybor Corp. v. FAS Technologies, Inc.*, 138 F.3d 1448, 1467 (Fed. Cir. 1998) (en banc).

One who makes, uses, imports, sells or offers to sell the subject matter described by a valid claim (as properly construed) is said to “directly” infringe that patent and may be liable for damages and/or enjoined from future infringing conduct. *See generally*, 35 U.S.C. §271(a); *see also Halo Electronics, Inc. v. Pulse Electronics, Inc.*, 769 F.3d 1371, 1378 (Fed. Cir. 2014).

There are two basic types of direct patent infringement: literal infringement and infringement under the Doctrine of Equivalents. *See Warner-Jenkinson Co. v. Hilton Davis Chem. Co.*, 520 U.S. 17, 39-40 (1997).

Additionally, a person or corporation may be liable as an “indirect” infringer if that person or corporation either “contributes” to a direct infringement or actively “induces” the direct infringement of a patent. *See generally*, 35 U.S.C. §§271(b)(c); *see also Limelight Networks, Inc. v. Akamai Techs., Inc.*, 134 S. Ct. 2111, 2117 (2014).

### A. Literal Infringement

In order to find literal infringement of a claim, each and every element or step of a claim must be present in an accused device or performed by an accused actor. *See Limelight*, 134 S. Ct. at 2117. If the accused device or process lacks even a single element of a claim, then literal infringement cannot be found. *See id.* The mere addition of elements or functions to an otherwise infringing combination generally does not negate infringement. *See Amgen Inc. v. F. Hoffmann-La Roche Ltd.*, 580 F.3d 1340, 1376 (Fed. Cir. 2009) (citing *Amstar Corp. v. Envirotech Corp.*, 730 F.2d 1476, 1481-82 (Fed. Cir. 1984)).

Determination of whether an element of an accused structure is “equivalent” to a corresponding structure identified in the patent specification under § 112, ¶ 6 (for purposes of literal infringement), hinges on whether the differences between the two are substantial or insubstantial. This question in turn resolves to a determination of “whether the ‘way’ the accused structure performs the claimed function, and the ‘result’ of that performance, are substantially different from the ‘way’ the claimed function is performed by the ‘corresponding structure . . . described in the specification,’ or its ‘result.’” *Pacific Coast Marine Windshields v. Malibu Boats*, 739 F.3d 694, 700 (Fed. Cir. 2014) (citing *Graver Tank*, 339 U.S. at 612). Equivalence under § 112,

¶ 6 is determined from the perspective of one of skill in the art at the time the patent issues (not at the time of the alleged infringement). *See Al-Site Corp. v. VSI Int'l, Inc.*, 174 F.3d 1308, 1320 (Fed. Cir. 1999).

### **B. Doctrine Of Equivalents**

Where there is no literal correspondence between the elements of a claim and the accused product, the accused product may still be found to infringe under the Doctrine of Equivalents if it contains elements equivalent to each element set forth in the claim. *See Warner-Jenkinson*, 520 U.S. at 39-40. The Doctrine of Equivalents is applied separately for each element of a claim not literally found in the accused process or device. *See id.* at 29. Whether an equivalent is present depends upon the substantiality of the differences between the claim element and an element or aspect of the accused process or device. *See id.* at 39-41. Infringement may be found even if a claim element does not literally correspond to an element of the accused process or product if such elements perform substantially the same overall function, in substantially the same way, to achieve substantially the same overall result. *See Graver Tank*, 339 U.S. at 608; *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushii Co., Ltd. et al.*, 535 U.S. 722, 732-33 (2002).

The Doctrine of Equivalents is subject to several legal limitations. For example, a patentee is estopped, or precluded, under the Doctrine of Equivalents, from attempting to recapture claim coverage that was given up during prosecution of its patent application. *See Festo*, 535 U.S. at 734. An estoppel may arise as a result of amendments that narrow the scope of a claim to satisfy any requirement of the Patent Act. *See id.* at 736. A narrowing amendment creates a rebuttable presumption of an estoppel. *See id.* at 735. The scope of an estoppel depends on “the inferences that may reasonably be drawn from the amendment.” *Id.* at 737-38. Where an amendment creates prosecution history estoppel with regard to a claim element, application of the Doctrine of Equivalents to the claim element is presumed to be completely barred, unless the patentee can show that “one skilled in the art cannot reasonably have been expected to have drafted a claim that would have literally encompassed the alleged equivalent.” *Id.* at 741.

There are other limitations on the Doctrine of Equivalents. For example, each element of a claim is important, and accordingly, the scope of equivalents cannot extend so far that it eliminates any element. *See Cooper Cameron Corp. v. Kvaerner Oilfield Products Inc.*, 291 F.3d 1317, 1321 (Fed. Cir. 2002) (“It is important to ensure that the application of the doctrine, even as to an individual element, is not allowed such broad play as to effectively eliminate that element in its entirety.”). In addition, the scope of equivalents is bounded by the prior art, so that a claim cannot be extended via the Doctrine of Equivalents to encompass or “ensnare” the prior art. *See Wilson Sporting Goods Co. v. David Geoffrey & Assoc.*, 904 F.2d 677, 683 (Fed. Cir. 1990) (*overruled in part on other grounds*, *Cardinal Chem. Co. v. Morton Int'l, Inc.*, 508 U.S. 83, 92 n.12 (1993)).

### **C. No Direct Infringement Of Certain Claims Of The ‘225 Patent**

As an initial matter, with respect to claims 13, 18 and 20, these claims are written in such a way that they claim not only the detachable brush element (i.e., the whip). For example, claim 13 is directed to an “assembly for processing carcasses of slaughtered animals.” Among other

elements, the assembly requires a rotatable body, which includes male counter-coupling members. Similarly, claim 20 requires a rotatable body that includes a plurality of rods associated therewith and spaced around at least one shaft. Claim 18, in addition to the rotatable body, further requires a frame and drive means for causing rotation of the rotatable body relative to the frame.

In each of these claims, structures outside or in addition to the brush element are required. As Lornic sells only the brush element (i.e., the Lornic Whip), Lornic cannot be deemed to directly infringe these claims. Only an end user that has each of the required components of the claim, in addition to the brush elements, such as the rotatable body, the frame and the drive means, for example, could possibly directly infringe the claim.

Thus, the patentee would first have to show that there is a literal infringer before Lornic could be found liable for infringement indirectly, either through contributing to the infringement or inducing others to infringe. *See, Limelight*, 134 S. Ct. at 2117 (“there has simply been no infringement of the method...because the performance of all the patent’s steps is not attributable to any one person. And... where there has been no direct infringement, there can be no inducement of infringement...”).

It is our opinion that utilization of the Lornic Whip by someone in an assembly having a rotatable body, as well as one having a rotatable body with a frame and drive means, would not yield a direct infringement of the claims of the ‘225 patent. Consequently, without a direct infringer, there can be no indirect infringement liability imposed upon Lornic.

#### **D. No Literal Infringement Of The Claims Of The ‘225 Patent**

Each of the independent claims requires that “the narrowed entrance channel widens into the female receiving space.” When properly construed, the Lornic Whip does not include such a structure, and therefore lacks a required element of the claims of the ‘225 patent.

As explained above, it is required that the narrowed entrance channel expands as it reaches the female receiving space, such that the narrowest point of the narrowed entrance channel is spaced apart from the female receiving space. Such a structure can be seen in Figure 1D of the ‘225 patent.

As also explained above, the Lornic Whip has its narrowest point at the female receiving space. That is, the narrowed entrance channel does not expand as it reaches the female receiving space. Rather, it stays the same narrowed configuration.

As all of the claims require such a structure, and the Lornic Whip does not have such a structure, it cannot be deemed to infringe. Therefore, it is our opinion that a well-informed court will conclude that the Lornic Whip does not literally infringe any of the claims for this reason.

Additionally, claims 1 and 19, further require that “the whip and the female coupling member are manufactured as a single material part.” As explained above, such a construction requires that the whip and the female coupling member are formed together from only one piece of material.



As set forth above, the Lornic Whip has a first material which forms the two whips and that surrounds the female coupling member. However, the female coupling member is formed from an insert that is of a different material than the remainder of the Lornic Whip. Thus, it is not formed from only one piece of material, but is formed from two separate pieces that are joined together.

Thus, it is our opinion that a well-informed court would also conclude that the Lornic Whip does not literally infringe claims 1 and 19 for this additional reason.

#### **E. No Infringement Of The Claims Of The ‘225 Patent Under The Doctrine Of Equivalents**

As to the Doctrine of Equivalents, in each of the claims, the limitation that “the whip and the female coupling member are manufactured as a single member part” was specifically added to overcome a rejection of the Examiner. That is, not until this element was introduced (even with all of the amendments in the multiple office actions), were the claims deemed allowable. As set forth above, estoppel arises from this amendment. Thus, an application of the Doctrine of Equivalents as to this element is barred.

Furthermore, the only way to read the Lornic Whip as having this element, would be to fully eliminate the element from the claim. The Doctrine of Equivalents cannot be applied so broadly as to eliminate an element in its entirety.

The same is true with respect to the limitation added to claims 1 and 19 that “the whip and the female coupling member are manufactured as a single material part.” Again, the application of the Doctrine of Equivalents is barred due to the estoppel that arises from this amendment. Also, one would have to read the element entirely out of the claim so as to expand the element beyond the only one component.

In view of the foregoing, it is our opinion that a well-informed court will determine that the Lornic Whip does not infringe any one of the claims of the ‘225 patent either directly or indirectly.

#### **F. No Infringement Of The Dependent Claims**

The dependent claims of the ‘225 patent each include all of the limitations of the independent claims from which they depend. *See* 35 U.S.C. §112, ¶4. Accordingly, these dependent claims cannot be infringed, either literally or under the Doctrine of Equivalents, for the same reasons as presented above, that the independent claims on which they are based are not infringed. *See Jeneric/Pentron, Inc. v. Dillon Co.*, 205 F.3d 1377, 1383 (Fed. Cir. 2000) (“[A] dependent claim, by nature, incorporates all the limitations of the claim to which it refers.”); *see also* 35 U.S.C. § 112, ¶ 4.

### **VIII. Conclusion**

The ‘225 patent claims describe assemblies and devices that include a brush element, as well as the brush element itself. As properly construed, some of the claims require that the brush element

structures are formed together from only one material. And, all the claims require that the narrowed entrance channel expands as it reaches the female receiving space, such that the narrowest point of the narrowed entrance channel is spaced apart from the female receiving space.

As the Lornic Whip lacks these structures, literally or under the Doctrine of Equivalents, it is our opinion that a well-advised court would determine that Lornic Whip does not infringe, either directly or indirectly, any of the claims of the '225 patent, either literally or under the Doctrine of Equivalents.

Should you have any questions regarding this opinion, or any other matter, please do not hesitate to contact me.

Sincerely,



Jovan N. Jovanovic

JNJ:ai

Attachment